

B.) Rejection of claims 2-4 and 16-18 under 35 U.S.C. §112, second paragraph:

Claims 2, 4, 16, and 18 have been amended as per the Examiner's request to overcome the rejection. Claims 3 and 17 have been cancelled. Attached hereto is a marked-up version of the changes made to the claims by the current amendment. The attached page is captioned "**VERSION WITH MARKINGS TO SHOW CHANGES MADE**".

Applicants respectfully submit the rejection has been overcome and request that it be withdrawn.

C.) Rejection of claims 1-5 and 13-19 under 35 U.S.C. §102(e) as being anticipated by *Shakuda*:

Applicants' independent claims 1 and 13, each as amended, each claim an insulating nitride layer that is formed as a buffer layer. The insulating nitride layer is formed from a group III-V compound semiconductor heavily doped mostly with cadmium.

This is clearly unlike *Shakuda*, which fails to disclose or even suggest a buffer layer that is doped with cadmium. Referring to *Shakuda* Figure 2(d), *Shakuda* discloses n-type buffer layers 2 and 3 formed on a substrate 1. An active layer 5 is formed on the buffer layers 2 and 3. A p-type clad layer 6 is formed on top of the active layer 5.

As stated in *Shakuda*, *Shakuda*'s n-type buffer layers 2 and 3, which are located between its substrate 1 and its active layer 5, are doped with Si, Ge, Sn, S, Se or Te. Unlike Applicants' claims 1 and 13, nowhere does *Shakuda* disclose or even suggest that its buffer layers are doped with cadmium. In fact, *Shakuda* teaches away from doping its buffer layers 2 and 3 with cadmium, by stating that its p-type clad layer 6 and its active layer 5 can be doped with cadmium. Nowhere however does *Shakuda* disclose or suggest doping its buffer layers 2 and 3 with cadmium. Therefore, *Shakuda* fails to disclose or even suggest Applicants' claims 1 and 13.


Claims 2, 4, 5, 14-16, 18, and 19 depend directly or indirectly from claims 1 or 13 and are therefore allowable for at least the same reasons that claims 1 and 13 are allowable.

Applicants respectfully submit that the rejection has been overcome and request that it be withdrawn.

CONCLUSION

In view of the foregoing, it is submitted that claims 1, 2, 4, 5, 13-16, 18 and 19 are patentable. It is therefore submitted that the application is in condition for allowance. Notice to that effect is respectfully requested.

Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the Claims:

Please amend claims 1, 2, 4, 13, 16, and 18 as follows:

1. (Twice Amended) An insulating nitride layer formed as a buffer layer from a group III-V nitride compound semiconductor heavily doped mostly with cadmium.

2. (Amended) An insulating nitride layer as defined in Claim 1, which is heavily doped substantially with said [group IIB element] cadmium as an impurity.

4. (Amended) An insulating nitride layer as defined in Claim 1, which is doped with said [group IIB element] cadmium in an amount not less than $1 \times 10^{17}/\text{cm}^3$.

13. (Twice Amended) A semiconductor device which has an insulating nitride layer formed as a buffer layer from a group III-V nitride compound semiconductor heavily doped mostly with cadmium.

16. (Amended) A semiconductor device as defined in Claim 13, in which the insulating nitride layer is heavily doped substantially with said [group IIB element] cadmium as an impurity.

18. (Amended) A semiconductor device as defined in Claim 13, in which the insulating nitride layer is doped with said [group IIB element] cadmium in an amount not less than $1 \times 10^{17}/\text{cm}^3$.

Please cancel claims 3 and 17.

CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited as First Class Mail in an envelope addressed to Mail Stop RCE, Commissioner for Patents, PO Box 1450, Alexandria, Virginia 22313-1450 on May 5, 2003.

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